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PATENT

IN THE U.S. PATENT AND TRADEMARK OFFICE

Appellant:	Andres HYLTANDER, et al.
Application No.:	10/529,496
Art Unit:	3715
Conf. No.:	8521
Filed:	September 16, 2005
Examiner:	Alvin Leabres CARLOS
For:	DEVICE AND METHOD FOR GENERATING A VIRTUAL ANATOMIC ENVIRONMENT
Atty. Dkt. No.:	10400-000151/US

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November 16, 2009

APPELLANT'S BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Sir:

This is an Appeal Brief in response to the Advisory Action mailed August 31, 2009, pertaining to Claims 1, and 3-22. A Notice of Appeal from this Final Rejection was timely filed on September 16, 2009. Appellant submits herewith their Brief on Appeal as required by 37 C.F.R. §41.37 along with the appropriate governmental fees as required by 37 C.F.R. §41.20(b)(2).

41.37(c)(1)(i). REAL PARTY IN INTEREST:

The real party in interest is Surgical Science Sweden AB, as recorded on reel 016813 and frame 0552.

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41.37(c)(1)(ii). RELATED APPEALS AND INTERFERENCES:

There are no pending Appeals or Interferences related to this application.

41.37(c)(1)(iii). STATUS OF CLAIMS:

Claims 1 and 3-22 are pending in this application, with claims 1 and 7 being in independent form. Claim 2 has previously been cancelled. Each of claims 1 and 3-22 remain finally rejected and are being appealed.

1. Claims 1, 5, 7-8, 11-12 and 14-22 are rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent No. 5,769,640 ("Jacobus"), and further in view of U.S. Patent No. 6,310,619 ("Rice");
2. Claims 3-4, 6, 9-10 and 13 are rejected under 35 U.S.C. §103(a), as being unpatentable over Jacobus in view of Rice, and further in view of U.S. Patent No. 5,791,907 ("Ramshaw").

Claims 1 and 3-22 are being appealed.

41.37(c)(1)(iv). STATUS OF AMENDMENTS:

An Amendment Under 37 C.F.R. §1.116 was filed July 28, 2009. The Claims Appendix reflects claims 1, 3 and 4-22 as listed in the July 28, 2009 submittal.

41.37(c)(1)(v). SUMMARY OF CLAIMED SUBJECT MATTER:

The following explains the subject matter set forth in each claim argued on appeal by way of example embodiments in the specification by page and line number, and in the drawings, if any, by reference characters only to satisfy 37 C.F.R. §41.37(c)(1)(v). This concise explanation relies on example embodiments

from the specification to describe the claims; however, the claims recite subject matter not limited to these example embodiments. Independent claims 1 and 7 are argued on appeal and discussed below.

A. Concise explanation of the subject matter set forth in each independent claim

1. A general discussion of the subject matter, described in the specification to assist the Board in understanding example embodiments described in the present application.

As described on at least page 3, lines 13-32 of Appellant's as-filed application, example embodiments provide for different "virtual environments" 4 (see at least FIG. 3 of the instant application) that may be created without modeling the entire environment from the beginning. This is accomplished via a type of *building block* functionality, as provided by the recited inventions of independent claims 1 and 7. As described on at least page 3, line 13 through page 4, line 26 of the instant application, a "main virtual anatomic environment" 1 (included in the main virtual anatomic environment modeler 15, as shown in FIG. 3 of the instant disclosure) is provided, which may represent an internal cavity of a living being (e.g., the "main virtual anatomic environment" 1 may represent for instance an abdominal cavity or a chest cavity). As described on at least page 3, line 33 through page 4, line 18, a "library" 3 of "local anatomic environments" 2 is also provided, where ***each*** "local anatomic environment" 2 may represent an individual variation of an internal area of a living being (the "local anatomic environment" being for instance an organ which includes corresponding arteries, veins, and

ducts). Specifically, ***each*** "local anatomic environment" 2 may individually represent a *different configuration of a same organ* with its corresponding arteries, veins, and ducts, as they would be found in a living being (i.e., many "local anatomic environments" 2 may be created for *one organ*, ***each*** "local anatomic environment" 2 representing a different position and/or shape of the organ, or a different configuration of arteries, veins and ducts that may be entering/exiting the organ). As recited in claims 1 and 7, various "virtual environments" 4 (a *complete model* of an area of a living being) may then be created by including various "local anatomic environments" 2 in a "main virtual anatomic environment" 1. In this sense, the "virtual environment" 4 is the *finished product*, whereas the "main virtual anatomic environment" 1 (for instance an internal cavity, such as a chest cavity) and the different variations of "local anatomic environments" 2 (for instance the organs found in a chest cavity) are *building blocks* that may be combined to produce the *finished product* (the completed model).

It is important to note that recited claims 1 and 7 provide the benefit of needing to model each one variation of a "local anatomic environment" 2 ***only once***, and thereafter the *building block* functionality of claims 1 and 7 allow for a great number of "virtual environments" 4 (the completed model) to then be created by swapping out different "local environments" 2 within a "main virtual anatomic environment" 1 (as opposed to separately modeling each component of an entire "virtual anatomic environment" 4, including many combinations of separately configured "local anatomic environments" 2, from the beginning).

As described on page 4, lines 3-18 of the instant application, and as claimed in dependent claims 3 and 9, the "local anatomic environments" 2 (i.e., the *building blocks* of the completed model) may be randomly selected, such that the probability of randomly selecting a certain "local anatomic environment" 2 may correspond

with the degree of occurrence that the "local anatomic environment" 2 exists in living beings, to provide a realistic simulation of a "virtual environment" 4 (i.e., the *completed model*).

2. An explanation of the subject matter set forth in each independent claim, and each dependent claim argued separately, referring to the specification and/or the drawings by reference characters in accordance with 37 CFR 41.37(c)(1)(v).

Independent Claim 1

Claim 1 recites " A method for generating a virtual anatomic environment for use in a computer based visual simulation of minimally invasive surgery". As described on page 7, line 30 to page 10, line 6 of the as-filed application, and as shown in at least FIG. 3, a method of generating a virtual anatomic environment 4 (the completed model) used in a computer based visual simulation is provided.

Claim 1 further recites "providing a main virtual anatomic environment". This limitation reads on at least page 7, line 30 to page 8, line 4 describing a main virtual anatomic environment 1 created by a main virtual anatomic environment modeler 15, shown in at least FIG. 3.

Claim 1 further recites "selecting a local anatomic environment from a predefined library comprising a set of two or more local anatomic environments". This limitation reads on at least page 8, lines 15 to page 9, line 4, which describes a "library" 3 including "local anatomic environments" 2, as shown in at least FIG. 3.

Claim 1 further recites "all of the local anatomic environments of the library being separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being". This

limitation reads on at least page 8, line 15 to page 9, line 4 which describes "local anatomic environments" 2 as being a model of an internal area of a living being. For example, a "local anatomic environment" 2 may be an organ, such as a gall bladder or a heart. As described on page 8, line 29 to page 9, line 4, the "library" 3 may create a set of "local anatomic environments" 2 ***each*** modeling a biological variation of an internal area. Page 8, line 36 to page 9, line 2 provides an example of providing approximately 16 different "local anatomic environments" 2 to cover about 99% of the biological variations of internal areas found in humans.

Claim 1 further recites "including the selected local anatomic environment in said main virtual anatomic environment to form said virtual anatomic environment". This limitation reads on at least page 9, lines 5-21, which describes a "main virtual anatomic environment" 1 created by the main virtual anatomic environment modeler 15 as an area that surrounds respective "local anatomic environments" 2, as shown in FIG. 3. For example, if a "local anatomic environment" 2 is an organ, then a "main virtual anatomic environment" 1 may be a cavity such as a chest cavity, as described on page 9, lines 8-11. The combination of a "local anatomic environment" 2 in a "main virtual anatomic environment" 1 is accomplished to create a "virtual anatomic environment" 4 (the completed model), as shown in FIG. 3 and as described on page 9, lines 5-21 and lines 28-32.

Claim 1 further recites "the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings". This limitation reads on at least page 9, lines 5-13 and page 9, line 28 to page 10, line 6 which describes selecting "local anatomic environments" 2 to be placed in

respective "main virtual anatomic environments" to create different "virtual environments" 4 (the completed model) representing anatomic variations occurring in living beings.

Dependent claim 3

Claim 3 recites "wherein the step of selecting a local anatomic environment from a predefined library comprising two or more of local anatomic environments further comprises the step of randomly selecting one of the local anatomic environments in the library". As described on at least page 10, lines 18-29, the selection of a "local anatomic environment" from a library may occur by randonmly selecting the "local anatomic environment."

Dependent claim 4

Claim 4 recites " wherein the probability of randomly selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in living beings". As described on at least page 10, lines 21-29, the random selection of "local anatomic environments" may occur by randomly selecting based on the actual occurance of the anatomic variation of the "local anatomic environment" found in a living being.

Independent Claim 7

Claim 7 recites "A device for generating a virtual anatomic environment for use in a computer based visual simulation of minimally invasive surgery". As described on page 7, line 30 to page 10, line 6, and as shown in at lerast FIG. 3, a device for generating a virtual anatomic environment 4 (the completed model) in a computer based visual simulation is provided.

Claim 7 further recites "a modelling device for providing a main virtual anatomic environment". This limitation reads on at least page 7, line 30 to page 8, line 4 describing a main virtual anatomic environment 1 created by a main virtual anatomic environment modeler 15, shown in at least FIG. 3.

Claim 7 further recites "a library, comprising a set of two or more local anatomic environments, all of the local anatomic environments of the library being separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being". This limitation reads on at least page 8, line 15 to page 9, line 4, which describes a "library" 3 including "local anatomic environments" 2, as shown in at least FIG. 3. The "local anatomic environments" 2 are models of an internal area of a living being, which may be for instance an organ such as a gall bladder or a heart. As described on page 8, line 29 to page 9, line 4, the "library" 3 may create a set of "local anatomic environments" 2 ***each*** modeling a biological variation of an internal area. Page 8, line 36 to page 9, line 2 provides an example of providing approximately 16 different "local anatomic environments" 2 to cover about 99% of the biological variations of internal areas found in humans.

Claim 7 further recites "means for incorporating one of the local anatomic environments of the library into the main virtual anatomic environment, together forming said virtual anatomic environment". This limitation reads on at least page 9, lines 5-21, which describes a "main virtual anatomic environment" 1 created by the main virtual anatomic environment modeler 15 as an area that surrounds respective "local anatomic environments" 2, as shown in FIG. 3. For example, if a "local anatomic environment" 2 is an organ, then a "main virtual anatomic environment" 1 may be a cavity such as a chest cavity, as described on page 9, lines 8-11. The combination of a "local anatomic environment" 2 in a "main virtual

anatomic environment" 1 is accomplished to create a "virtual anatomic environment" 4 (the completed model), as shown in FIG. 3 and as described on page 9, lines 5-21 and lines 28-32.

Claim 7 further recites "thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings". This limitation reads on at least page 9, lines 5-13 and page 9, line 28 to page 10, line 6 which describes selecting "local anatomic environments" 2 to be placed in respective "main virtual anatomic environments" to create different "virtual environments" 4 (the completed model) representing anatomic variations occurring in living beings.

Dependent claim 9

Claim 9 recites " wherein the selection device is arranged to randomly select one of said local anatomic environments from said library to be included in said virtual anatomic environment". As described on at least page 10, lines 18-29, the selection of a "local anatomic environment" from a library may occur by randonmly selecting the "local anatomic environment."

Dependent claim 10

Claim 10 recites "wherein the selection device is arranged to randomly select one of said local anatomic environments in such a way that the probability of selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in human beings". As described on at least page 10, lines 21-29, the random selection of "local anatomic environments" may occur by randomly selecting based on the actual occurance of the anatomic variation of the "local anatomic environment" found in a living being.

Dependent claim 21

Claim 21 recites "wherein components included in the local anatomic environment are excluded in the main virtual anatomic environment". As described in on at least page 9, lines 11-13, the components included in the "local anatomic environment" 2 may be excluded from the "main virtual anatomic environment."

Dependent claim 22

Claim 22 recites " wherein components included in the local anatomic environments are excluded in the main virtual anatomic environment". As described in on at least page 9, lines 11-13, the components included in the "local anatomic environment" 2 may be excluded from the "main virtual anatomic environment."

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41.37(c)(1)(vi). GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Rejection of claims 1, 5, 7-8, 11-12 and 14-22 under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent No. 5,769,640 ("Jacobus"), and further in view of U.S. Patent No. 6,310,619 ("Rice").

Rejection of claims 3-4, 6, 9-10 and 13 under 35 U.S.C. §103(a), as being unpatentable over Jacobus in view of Rice, and further in view of U.S. Patent No. 5,791,907 ("Ramshaw").

41.37(c)(1)(vii). ARGUMENT

A. Rejections under 35 U.S.C. §103 – *Jacobus in view of Rice*

Claims 1, 5, 7, 8, 11, 12, and 14-22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent 5,769,640 ("Jacobus") in view of U.S. Patent 6,310,619 ("Rice"). This rejection is respectfully traversed.

With regard to independent claim 1, the Examiner asserts that Jacobus discloses all of the claim limitations with the exception that Jacobus does not disclose the feature of the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings including selected local anatomic environments in said main virtual anatomic environment to form said virtual anatomic environment. The Examiner asserts that Rice discloses these missing limitations. The Examiner asserts that it would have been obvious to a person of ordinary skill in the art to modify Jacobus by incorporating the teachings of Rice in order to provide a computer-implemented virtual reality,

tissue-specific body model that increases the efficiency and accuracy of anatomical study in an environment having user-variable physical and environmental properties as taught by Rice.

Appellant asserts that Jacobus in view of Rice does not teach or suggest "selecting a local anatomic environment from a predefined library comprising a set of two or more local anatomic environments, all of the local anatomic environments of the library being *separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being*," as recited in claim 1. Appellant further asserts that neither Jacobus, nor Rice, teach or suggest the *building block* functionality of a "main virtual anatomic environment," a library of "local anatomic environments" (each separate "local anatomic environment" capable of representing an anatomic variation of a *same internal area* of a living being) and a "virtual anatomic environment" that combine to provide "*the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments*," as recited claim 1.

Appellant submits that Jacobus teaches a method of measuring and recording sights and sounds of a medical procedure, for accurate play back of the recording to generate new information to emulate responses to alternative actions taken by a surgeon trainee during simulation. The Jacobus method appears to be best summarized in column 4, lines 30-38, which cites two basic functions of the method. Specifically, the first function of Jacobus is "*measuring and recording*" of an actual surgery, and the second function is "*accurately playing back . . . using the recorded data*." Any images not fully recorded during the measuring / recording of the medical procedure itself, may be supplemented with miscellaneous

images taken from other "medical diagnostics or image modalities," described in column 4, lines 5-9 of Jacobus to include CT data, PET data, MRI data, etc.

Appellant asserts that the *measuring*, *recording*, and *accurate playback of recorded data images* (both images that are taken during the recording of the initial procedure, as well as images taken during "medical diagnostics"), is not providing a library of "local anatomic environments," all of the local anatomic environments being "*separately modelled three-dimensional models* ***each*** *representing an individual anatomic variation in a local internal area of a living being,*" as recited in claim 1. Specifically, Appellant asserts that Jacobus does not disclose or fairly suggest that ***each*** "local anatomic environment" serves the purpose of representing a different individual anatomic variation. Rather, Jacobus discloses, in essence, separately modeling individual "*virtual environments*," where each one "virtual environment" includes images that happen to be recorded during the one surgery (or, images that happen to be supplemented by a random collection of medical diagnostic / image modality images, as described in column 4, lines 1-9 of Jacobus). Therefore, ***each*** "local anatomic environment" (i.e., each organ, for instance) of Jacobus does not represent "*an individual anatomic variation in a local internal area of a living being*." Rather, the "local anatomic environments" of Jacobus may, at best, capture ***some*** miscellaneous "*anatomic variations*," simply by luck or chance. Additionally, it is quite possible that many of the "local anatomic environments" of Jacobus may represent *the same* "anatomic variation" (for instance, of the collection of images of a heart in Jacobus, many of the images may represent *the same* anatomic variation of the heart). Therefore, it is not at all accurate to say that Jacobus teaches or suggests separately modeled "local anatomic environments" where ***each*** model represents an anatomic variation. For at least these reasons, Appellant asserts that Jacobus does not teach or suggest

"all of the local anatomic environments of the library being *separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being*," as recited in claim 1.

Additionally, because the "local anatomic environments" of Jacobus do not ***each*** represent an individual anatomic variation, Appellant therefore also asserts that Jacobus does not disclose or suggest selecting from a "library" of "local anatomic environments." Specifically, Jacobus does not teach or suggest "selecting a local anatomic environment from a predefined *library comprising a set of two or more local anatomic environments*, all of the local anatomic environments of the library being *separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being*," as recited in claim 1. Specifically, Jacobus does not disclose a "library" where *every single* (i.e., ***each***) "*local anatomic environment*" serves the purpose of representing a distinct individual anatomic variation. To provide an illustrative example, **Jacobus does not disclose or suggest providing, for instance, five separate "local anatomic environments" of a heart (the heart being an example of an "internal area"), where every one of the five separate models *each* serves the purpose of representing a *different* anatomic variation of the heart (i.e., Jacobus does not disclose that no two models of the heart are identical, and *each* model serves the purpose of representing a unique, separate anatomic variation of the heart)**. For at least this reason, Appellant asserts that Jacobus does not teach or suggest "selecting a local anatomic environment from a predefined *library comprising a set of two or more local anatomic environments*, all of the local anatomic environments of the library being *separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being*," as recited in claim 1.

Furthermore, Appellant asserts that Jacobus does not teach or suggest a *building block* functionality of a "main virtual anatomic environment," a library of "local anatomic environments" and a "virtual anatomic environment." The *building block* functionality allows for the creation of many "virtual environments" (i.e., the completed model) by substituting separately modelled "local anatomic environments" (***each*** separate "local anatomic environment" representing an anatomic variation of an internal area of a living being) into a respective "main virtual anatomic environment" (i.e., a shell, such as an internal cavity of a living being). Cost savings of such *building block* functionality allows many "virtual environments" to be created by swapping out various "local anatomic environments" to create a final "virtual environment." Because Jacobus does not disclose this *building block* functionality, Appellant therefore asserts that Jacobus does not teach or suggest "including the selected local anatomic environment in said main virtual anatomic environment to form said virtual anatomic environment, *the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings*," as recited in claim 1.

Appellant asserts that a review of Rice indicates that Rice does not remedy the deficiencies of Jacobus, as described above. Rice discloses a complete three-dimensional, virtual reality, tissue-specific model of a living being, as described in column 4, line 54 to column 5, line 30. As described in column 5, lines 16-25, the model may include a database of cross-section images of male and female human bodies taken from CT, MRI images, and cryosection images to develop a database of images used to create *tissue-specific models*. Column 5, lines 3-8 provides an example list of five "*tissue-specific models*," the models including 1) compact and

calcious bone, 2) skeletal and smooth muscle, 3) hyaline, fibrous, elastic and articular cartilage, 4) dense regular and irregular connective tissue (tendons, ligaments, and facia), and 5) central and peripheral nervous tissue. As described in column 5, lines 8-12, each of these *tissue-specific models* is presented in an anatomically correct orientation, as they relate to the other *tissue-specific models*. As described in column 5, lines 10-12, an example of an anatomically correct orientation includes, for instance the biceps brachii (the *tissue-specific model* of "skeletal and smooth muscle") with its proper anatomical connection to the humorous, ulna, and radius (the *tissue-specific model* of "compact and calcious bone"), as shown in FIG. 1 of Rice. Appellant submits that while the database of CT, MRI and cryosection images of Rice (see column 5, lines 13-29 of Rice) allows some variability in the modeling of local internal areas of humans (such as the use of male organs, or female organs, as described in column 5, lines 16-20), the overriding purpose of Rice is to create an ***overall composite model*** composed of individual ***tissue-specific models*** of bone, muscle, cartilage, connective tissue, and/or nervous tissue that the user may decide to include or exclude. More specifically, Appellant asserts that while Rice allows tissue-specific models to be modified to display some anatomic variation of local internal areas of humans, Rice does not teach or suggest the separate modeling of "local anatomic environments" where ***each*** model individually represents an anatomic variation. Further, Rice does not disclose a "library" of "local anatomic environments," where ***each*** "local anatomic environment" serves the purpose of representing an individual anatomic variation. Therefore, Appellant asserts that neither Jacobus, nor Rice, either singly or in combination with each other, teaches or suggests "selecting a local anatomic environment from a predefined library comprising a set of two or more local anatomic environments, all of the local anatomic environments of the library being

separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being," as recited in claim 1.

Appellant further asserts that because Rice does not teach or suggest a library of "local anatomic environments" each representing an anatomic variation, Rice therefore does not teach or suggest the *building block* functionality of a "main virtual anatomic environment" that may include different "local anatomic environments" to create various "virtual anatomic environments." Rather, Rice only discloses creating a ***composite model*** that may include / exclude bone, muscle, cartilage, connective tissue, and/or nervous tissue where *some* variation in local internal areas may be displayed using various CT, MRI and cryosection images. However, neither Jacobus, nor Rice, either singly or in combination with each other, teach or suggest "including the selected local anatomic environment in said main virtual anatomic environment to form said virtual anatomic environment, *the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings*," as recited in claim 1.

With regard to dependent claim 21, Appellant asserts that Jacobus in view of Rice does not teach or suggest "*wherein components included in the local anatomic environment are excluded in the main virtual anatomic environment*," as recited in claim 21. Specifically, Appellant submits that column 4, lines 1-38 of Jacobus does not teach or suggest a "*local anatomic environment*" that is separate from a "*main virtual anatomic environment*," as recited in claim 21. Appellant submits that Jacobus does not pertain to the efficient *building block* functionality of a predefined library of "local anatomic environments" where different "local anatomic environments" can be selected as subcomponents of a "main virtual anatomic

environment." For this reason, Jacobus does not teach or suggest, or even contemplate providing a "*local anatomic environment*" that is separate from a "*main virtual anatomic environment*," as recited in claim 21. Appellant asserts that a review of Rice indicates that Rice does not remedy the deficiencies of Jacobus. Rice only discloses ***a composite model*** that may be modified by a compilation of images, but Rice does not teach or suggest a "*local anatomic environment*" separate from a "*main virtual anatomic environment*." For at least these reasons, Appellant asserts that neither Jacobus, nor Rice, either singly or in combination with each other, teach or suggest "*wherein components included in the local anatomic environment are excluded in the main virtual anatomic environment*," as recited in claim 21.

With regard to independent claim 7 and dependent claim 22, Appellant asserts that these claims contain features similar to independent claim 1 and dependent claim 21, respectively, such that at least the same arguments can be made for claims 7 and 22.

For at least the reasons stated above related to independent claims 1 and 7, and dependent claim 21 and 22, Appellant asserts that these claims are patentable. Due at least to the dependence of claims 5, 8, 11-12, and 14-20 on the independent claims, Appellant also asserts that these claims are patentable. Therefore, Appellant respectfully requests that the Board reverse the Examiner's art grounds of rejection of these claims under 35 U.S.C. §103.

B. Rejections under 35 U.S.C. §103 – *Jacobus in view of Rice and further in view of Ramshaw*

Claims 3, 4, 6, 9, 10, and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Jacobus in view of Rice and further in view of U.S. Patent 5,791,907 ("Ramshaw"). This rejection is respectfully traversed.

With regard to dependent claim 3, the Examiner concedes that Jacobus in view of Rice fails to teach the step of randomly selecting one of the local anatomic environments in the library.[1] The Examiner asserts that Ramshaw teaches this limitation, as the Examiner cites column 17, lines 9-12 of Ramshaw in making this assertion.

Appellant submits that Ramshaw is an interactive medical training system used to provide education and training in medical procedures. Column 17, lines 9-12 indicates that Ramshaw allows for the simulation of *random and unexpected* ***errors*** *during a medical procedure*. Column 17, lines 13-16 provides an example of an "*error*," as in the case where a user may properly select the use of a balloon dissector in a medical procedure where the medical procedure equipment may nevertheless illustrate improper balloon placement. Ramshaw's use of randomly simulated *unexpected* ***errors*** does not teach or suggest randomly selecting between "*local anatomic environments*," as recited in claim 1. And therefore the Examiner's assertion that Ramshaw *randomly selects* between "local anatomic environments" is entirely without merit. Appellant therefore asserts that neither Jacobus, nor Rice, nor Ramshaw, either singly or in combination with each other, teach or suggest "wherein the step of selecting a local anatomic environment from a predefined library comprising two or more of local anatomic environments further comprises

[1] Page 6 of the June 9, 2009 Office Action.

the step of *randomly selecting one of the local anatomic environments in the library*," as recited in claim 3.

With regard to dependent claim 4, Applciant asserts that Jacobus in view of Rice and further in view of Ramshaw, does not teach or suggest "*wherein the probability of randomly selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in living beings*," as recited in claim 4. Appellant submits that column 17, lines 25-31 of Ramshaw only disclose simulating random ***errors*** occurring in a medical procedure, rather than providing randomly selected "*local anatomic environments*" that correspond with the degree of occurrence that the "*local anatomic environment*" would have in a living beings. Appellant asserts that Jacobus in view of Rice does not remedy this deficiency of Ramshaw. Appellant asserts that because Jacobus in view of Rice does not disclose randomly selecting between "local anatomic environments," as recited in base claim 3, Appellant therefore also asserts that Jacobus in view of Rice also does not disclose the random selection of a "local anatomic environment" that corresponds to the degree of occurrence the "local anatomic environment" has in a living being. For at least this reason, Appellant asserts that neither Jacobus, nor Rice, nor Ramshaw, either singly or in combination with each other, teach or suggest "*wherein the probability of randomly selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in living beings*," as recited in claim 4.

With regard to dependent claims 9 and 10, Appellant asserts that these claims contain features similar to claims 3 and 4, respectively, such that at least the same arguments can be made.

For at least the reasons stated above related to dependent claims 3, 4, 9, and 10, Appellant asserts that these claims are patentable. Due at least to the dependence of claims 6 and 13 on the independent claims, Appellant also asserts that these claims are patentable. Therefore, Appellant respectfully requests that the Board reverse the Examiner's art grounds of rejection of these claims under 35 U.S.C. §103.

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CONCLUSION

Appellant respectfully requests the Board to reverse the Examiner's rejection of claims 1 and 3-22 and allow each of these claims.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By:  41,080

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41.37(c)(1)(viii). CLAIMS APPENDIX:

1. (Previously Presented) A method for generating a virtual anatomic environment for use in a computer based visual simulation of minimally invasive surgery, comprising the steps of:

providing a main virtual anatomic environment,

selecting a local anatomic environment from a predefined library comprising a set of two or more local anatomic environments, all of the local anatomic environments of the library being separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being, and

including the selected local anatomic environment in said main virtual anatomic environment to form said virtual anatomic environment, the selection of different combinations of selected local anatomic environments in said main virtual anatomic environment thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings.

2. (Cancelled)

3. (Previously Presented) A method according to claim 1, wherein the step of selecting a local anatomic environment from a predefined library comprising two or more of local anatomic environments further comprises the step of randomly selecting one of the local anatomic environments in the library.

4. (Previously Presented) A method according to claim 3, wherein the probability of randomly selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in living beings.

5. (Previously Presented) A method according to claim 1, wherein the main virtual anatomic environment is arranged to model an internal cavity of a human while the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in said internal cavity.

6. (Previously Presented) A method according to claim 1, further comprising the step of selecting, by user selection, a certain one of said local anatomic environments from said library and including it into said virtual anatomic environment.

7. (Previously Presented) A device for generating a virtual anatomic environment for use in a computer based visual simulation of minimally invasive surgery, comprising:

a modelling device for providing a main virtual anatomic environment,

a library, comprising a set of two or more local anatomic environments, all of the local anatomic environments of the library being separately modelled three-dimensional models each representing an individual anatomic variation in a local internal area of a living being, and

means for incorporating one of the local anatomic environments of the library into the main virtual anatomic environment, together forming said virtual anatomic environment,

thereby allowing generation of different virtual environments, each different virtual environment representing anatomic variations occurring in living beings.

8. (Previously Presented) A device according to claim 7, further comprising a selection device for selecting one of said local anatomic environments from said library to be included in said virtual anatomic environment.

9. (Previously Presented) A device according to claim 8, wherein the selection device is arranged to randomly select one of said local anatomic environments from said library to be included in said virtual anatomic environment.

10. (Previously Presented) A device according to claim 9, wherein the selection device is arranged to randomly select one of said local anatomic environments in such a way that the probability of selecting a certain local anatomic environment essentially corresponds with the degree of occurrence of that local anatomic environment in human beings.

11. (Previously Presented) A device according to claim 7, wherein the main virtual anatomic environment is arranged to model an internal cavity of a human while the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in said internal cavity.

12. (Previously Presented) A computer-based minimal-invasive surgery simulation system, comprising a device for generating a virtual anatomic environment as described in claim 7.

13. (Previously Presented) A method according to claim 1, wherein the step of selecting a local anatomic environment from a predefined library comprising two or more of simulated local anatomic environments further comprises the step of randomly selecting one of the local anatomic environments in the library.

14. (Previously Presented) A method according to claim 1, further comprising the step of selecting, by user selection, a certain one of said local anatomic environments from said library and including it into said virtual anatomic environment.

15. (Previously Presented) A method according to claim 5, further comprising the step of selecting, by user selection, a certain one of said local anatomic environments from said library and including it into said virtual anatomic environment.

16. (Previously Presented) A device according to claim 8, wherein the main virtual anatomic environment is arranged to model an internal cavity of a human while the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in said internal cavity.

17. (Previously Presented) A device according to claim 9, wherein the main virtual anatomic environment is arranged to model an internal cavity of a human while the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in said internal cavity.

18. (Previously Presented) A device according to claim 10, wherein the main virtual anatomic environment is arranged to model an internal cavity of a human while the set of local anatomic environments is arranged to simulate different arrangements of arteries, veins and ducts around an organ arranged in said internal cavity.

19. (Previously Presented) A computer-based minimal-invasive surgery simulation system, comprising a device for generating a virtual anatomic environment as described in claim 8.

20. (Previously Presented) A computer-based minimal-invasive surgery simulation system, comprising a device for generating a virtual anatomic environment as described in claim 9.

21. (Previously Presented) A method according to claim 1, wherein components included in the local anatomic environment are excluded in the main virtual anatomic environment.

22. (Previously Presented) A device according to claim 7, wherein components included in the local anatomic environments are excluded in the main virtual anatomic environment.

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41.37(c)(1)(ix). **EVIDENCE APPENDIX:**

As no evidence was submitted and relied upon in this Appeal, this Appendix contains no evidence pursuant to 37 C.F.R. §41.37(c)(1)(ix).

41.37(c)(1)(x). **RELATED PROCEEDINGS APPENDIX:**

As there are no Related Proceedings associated with this Appeal, no additional information is being supplied in an Appendix pursuant to 41.37(c)(1)(x).